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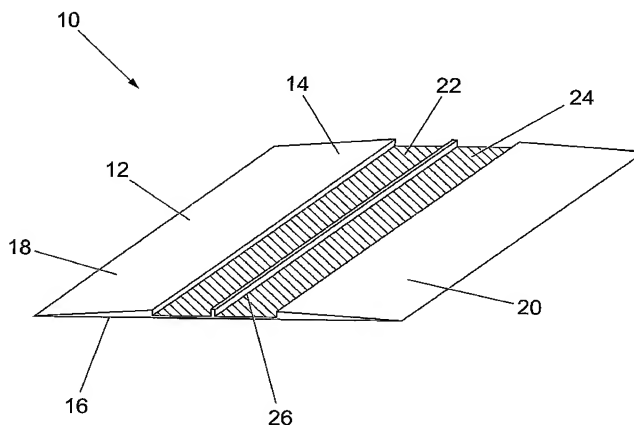
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(54) Title: INSECT AND ARACHNID TRAP



(57) **Abstract:** An insect and arachnid trap (10,100) comprises a substrate (12) having a top surface (14) onto which a sticky substance (24) is deposited. One embodiment of the trap (10) is provided with a reinforcing rib (26) to reinforce the thin sheet substrate. The trap (10, 100) may also have a channel (22, 22') into which the sticky substance (24) is deposited. The top surface (14) may have a smooth finish and be inclined to the horizontal in order to prevent trapped insects and arachnids from extricating themselves from the sticky substance. The sticky substance is a composition which includes polybutene oil and polyisobutylene. The sticky substance preferably includes 5-15 wt % polyisobutylene. This sticky substance in combination with the channel and smooth top surface provides an insect and arachnid trap which is more effective than known examples. The reinforcing rib ensures that the substrate (12) does not fold back upon itself when handled after use. Contact with trapped insects or arachnids is thus avoided.

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Insect and Arachnid Trap

1 The present invention relates to an apparatus for
2 trapping insects, arachnids and similar arthropods.
3
4 Traditional arrangements for trapping insects
5 consist of thin, flexible strips or coils of paper
6 or plastic coated with a sticky film. They are
7 normally suspended from ceilings or else adhered to
8 a window pane. Although such arrangements are
9 reasonably effective at trapping flying insects,
10 they are not particularly effective at trapping
11 arachnids. This is due to arachnids being able to
12 remove themselves from the sticky film using their
13 free legs to connect with an adjacent surface and
14 pull themselves free. A further disadvantage with
15 the aforementioned arrangements is that although the
16 sticky films can trap insects, they are not
17 sufficiently adhesive to successfully trap
18 arachnids. Many species of arachnid secrete a type
19 of oil through their feet in order to avoid sticking
20 to their own webs. As a result, they can also use
21 these secretions to avoid adhering to the films in

1 traditional insect traps. Furthermore, flypaper
2 often has the undesirable effect of sticking itself
3 to people or objects, for example, when stood upon
4 by a person. Finally, flypapers and similar traps
5 are conventionally thin sheets of paper or plastic.
6 As a result, they have very little rigidity and can
7 fold back on themselves when a used trap is being
8 disposed of. This can be an unpleasant experience
9 for someone who has a fear of insects or arachnids,
10 as they do not wish to come into contact with the
11 insects or arachnids, even when they have been
12 successfully trapped.

13

14 It is an object of the present invention to provide
15 an insect and arachnid trap that obviates or
16 mitigates one or more of the disadvantages referred
17 to above.

18

19 According to a first aspect of the present
20 invention, there is provided an insect and arachnid
21 trap comprising a substrate having a top surface and
22 a bottom surface, wherein at least a portion of the
23 top surface has a sticky substance applied thereto,
24 and wherein the substrate has at least one
25 reinforcement rib.

26

27 Preferably, the substrate is formed from a plastics
28 material and the at least one rib is integrally
29 formed with the substrate.

30

31 Preferably, the substrate is an elongate sheet
32 having a longitudinal axis, and wherein the at least

1 one rib runs substantially parallel to the
2 longitudinal axis.

3

4 Preferably, the substrate further includes a channel
5 formed in the top surface, and the sticky substance
6 is located in the channel.

7

8 Preferably, the at least one rib is located in the
9 channel.

10

11 Preferably, the channel is broader at its base than
12 at its top. Preferably, the channel has a depth of
13 between 1.5 and 2mm.

14

15 According to a second aspect of the present
16 invention, there is provided an insect and arachnid
17 trap comprising a substrate having a top surface and
18 a bottom surface, wherein the substrate has at least
19 one channel formed in the top surface, and wherein
20 at least a portion of the channel contains a sticky
21 substance.

22

23 Preferably, the substrate is an elongate sheet
24 having a longitudinal axis, and wherein the channel
25 runs substantially parallel to the longitudinal
26 axis.

27

28 Preferably, the trap further comprises at least one
29 reinforcing rib located in the channel. Preferably,
30 the rib is integrally formed with the substrate.

31 Preferably, the reinforcing rib runs parallel with
32 the channel.

1
2 Preferably, at least a portion of the top surface of
3 the substrate inclines upwardly from an edge of the
4 substrate to the channel. In a preferred
5 embodiment, the channel substantially bisects the
6 top surface of the substrate such that the top
7 surface has first and second top surface portions,
8 each of the top surface portions inclined upwardly
9 from an edge of the substrate to the channel.

10
11 Preferably, the channel is broader at its base than
12 at its top. Preferably, the channel has a depth of
13 between 1.5 and 2mm.

14
15 Preferably, the substrate is substantially
16 transparent.

17
18 Preferably, the top surface is provided with a
19 substantially smooth finish.

20
21 Preferably, the sticky substance is a composition
22 including polybutene oil and polyisobutylene. Most
23 preferably, the sticky substance includes between 5
24 and 15 wt % polyisobutylene.

25
26 In a preferred embodiment the sticky substance is
27 applied to the substrate in strips. Alternatively,
28 the sticky substance is applied to the substrate in
29 fluid form.

30

1 Preferably, at least a portion of the bottom surface
2 is coated with an adhesive adapted to secure the
3 trap to a surface.

4
5 Preferably, the trap further comprises mechanical
6 fixing means adapted to fix the trap to an adjacent
7 trap. The mechanical fixing means comprises a male
8 fixing element at a first end of the substrate and a
9 female fixing element at a second end of the
10 substrate. The mechanical fixing means is adapted
11 to permit adjacent traps to be folded on top of one
12 another.

13
14 Embodiments of the present invention will now be
15 described, by way of example only, with reference to
16 the accompanying drawings, in which:-

17
18 Fig. 1 is a perspective view of an insect trap
19 in accordance with the present invention;

20
21 Fig. 2 is a top view of the insect trap of Fig.
22 1;

23
24 Figs. 3(a) and 3(b) show examples of the
25 applications of the insect trap of Fig. 1;

26
27 Fig. 4 is a perspective view of a second
28 embodiment of an insect trap in accordance with the
29 present invention; and

30
31 Fig. 5 is a side view of the insect trap of
32 Fig. 4.

1
2 Referring to Figs. 1 and 2, an insect trap 10
3 comprises an elongate substrate, or body portion, 12
4 having a top surface 14 and a bottom surface 16.

5
6 The top surface 14 comprises two top surface
7 portions 18, 20 which incline upwardly in a lateral
8 direction from the longitudinal edges of the body
9 portion 12 towards the centre of the body portion
10 12. The top surface portions 18,20 are separated
11 from one another by a channel 22, which runs
12 longitudinally along the body portion 12. The top
13 surface portions 18,20 incline in opposing
14 directions, as can be seen in Fig. 1. The top
15 surface portions 18, 20 are also provided with a
16 smooth finish to prevent insects from removing
17 themselves from the trap 10, as will be explained
18 below.

19
20 The channel 22 is substantially U-shaped in cross-
21 section and contains a sticky substance 24. By
22 sticky it is meant that the substance 24 is intended
23 to have objects, in this case insects and arachnids,
24 adhere or stick thereto. The sticky substance 24
25 comprises a mixture of polybutene oil and
26 polyisobutylene. In a preferred embodiment, the
27 ideal composition of the sticky substance 24 is 90
28 wt % polybutene oil and 10 wt % polyisobutylene.
29 However, tests have shown that the sticky substance
30 24 is also effective with a composition of 5-15 wt %
31 polyisobutylene and the remainder polybutene oil.
32 The polyisobutylene is added to the polybutene oil

1 in order to improve the cohesion, and hence the
2 sticking properties, of the material. Without the
3 polyisobutylene, the viscosity of the polybutene oil
4 could be too great or too small to trap insects and
5 arachnids. If the polybutene oil is too viscous,
6 the insect or arachnid can walk across the top of
7 the sticky substance. If the polybutene oil is not
8 viscous enough, the insect or arachnid can pull its
9 legs out of the material, and the material will also
10 run if the trap is fixed to a non-horizontal
11 surface. By adding the polyisobutylene to the
12 material, an ideal viscosity for the material can be
13 achieved. Further ingredients, e.g. wax, may be
14 added to the composition depending on the
15 requirements of the application.

16

17 The channel 22 substantially bisects the top surface
18 14. It also may have a reinforcement rib, or
19 support, 26 which is positioned in the centre of the
20 channel portion 22 and which runs parallel to the
21 channel 22. The support 26 prevents any larger
22 unwanted objects coming into contact with the sticky
23 substance 24, for example if a person inadvertently
24 stands on the insect trap 10. The support 26 also
25 provides rigidity to the trap 10 for when the trap
26 is being handled, either before or after use.

27

28 The rib 26 is a thin strip that can be either added
29 to the channel portion 22 after manufacture or can
30 be integrally formed with the body portion 12 during
31 manufacture. The rib 26 is thick enough to allow a
32 person to stand upon the insect trap 10 and not

1 break the rib 26, and also thin enough to allow a
2 sufficient area of sticky substance 24 to be applied
3 to the channel portion 22. The sticky substance 24
4 may either be applied in the channel 22 in pre-
5 formed strips or else in the form of a liquid or
6 paste.

7
8 The illustrated embodiment has a channel portion 22
9 which has a depth of between 1.5 and 2 mm. However
10 it should be appreciated that this depth could be
11 greater or less than this amount, depending on the
12 application and the insects/arachnids the trap is
13 intended to catch.

14
15 The bottom surface 16 of the trap 10 is
16 substantially flat, thereby allowing the trap 10 to
17 be placed flush on a surface. The bottom surface 16
18 may include an adhesive material or the like, to
19 allow the insect trap 10 to be removably mounted to
20 surfaces such as floors or walls, as shown in the
21 examples of Figs. 3(a) and 3(b). Fig. 3(a) shows a
22 plurality of traps 10 positioned around the
23 circumference of a window. Fig. 3(b) shows a pair
24 of traps 10 positioned in the corner of a room.

25
26 The preferred material of construction of the insect
27 trap 10 is a plastics material which can be moulded
28 into the desired shape. The trap 10 can be moulded
29 in one piece, including the rib 26. Most
30 preferably, the trap is manufactured from a
31 polymeric material, such as polyvinylchloride (PVC)
32 or the like. The trap 10 is also preferably made

1 from a transparent material, in order to minimise
2 the visual impact of the trap.

3
4 A second embodiment of the trap, generally
5 designated 100, is shown in Figs. 4 and 5. The
6 features of the trap shared by the first and second
7 embodiments 10,100 are designated with the same
8 reference numerals used in respect of Figs. 1 and 2
9 described above. As with the first embodiment, the
10 top surface 14 of the trap 100 also comprises two
11 top surface portions 18,20 which incline upwardly in
12 a lateral direction from the longitudinal edges of
13 the body portion 12 towards the centre of the body
14 portion 12. The top surface portions 18,20 are
15 separated from one another by a channel 22', which
16 runs longitudinally along the body portion 12. The
17 top surface portions 18,20 incline in opposing
18 directions, as can be seen in Fig. 4, and are
19 provided with a smooth finish to prevent insects
20 from removing themselves from the trap 10, as will
21 be explained below.

22
23 The channel 22' has a substantially U-shaped
24 profile, but it is broader at its base than at its
25 top, as seen best in Fig. 5. The channel 22'
26 contains an sticky substance 24 which may be laid in
27 strips or else applied as a liquid or paste. The
28 channel 22' again substantially bisects the top
29 surface 14. It also may have a rib (not shown)
30 which is positioned in the centre of the channel 22'
31 and which runs parallel thereto.

32

1 The trap 100 has a bottom surface 16 which
2 corresponds with the bottom of the channel 22'. The
3 underside of the trap 100 is also provided with
4 first and second cut-away portions 19, 21. This
5 allows the insect trap 100 to be manufactured from
6 less material than the trap 10 and consequently
7 weighs less. The bottom surface 16 may again be
8 placed flush on a surface. The bottom surface 16
9 may include an adhesive material or the like, to
10 allow the insect trap 100 to be removably mounted to
11 surfaces such as floors or walls.

12

13 In operation, the insect trap 10,100 is placed in a
14 position where insects and arachnids are likely to
15 be found, such as by windows, doors and skirting
16 boards, for example. With the trap 10,100 in
17 position, an insect or arachnid crawls or lands on
18 the sticky substance 24 in the channel 22,22' of the
19 trap 10,100 and becomes trapped. Combined with the
20 effectiveness of the sticky substance 24, the depth
21 of the channel 22 and the smoothed surfaces 18, 20
22 either side do not allow the insect to get any grip
23 with any free legs and thus prevents them from
24 removing themselves from the trap 10,100.

25

26 A third preferred embodiment of the trap comprises a
27 thin, substantially flat plastic sheet. The third
28 embodiment differs from the first and second
29 embodiments in that the trap does not have a channel
30 member or inclined top surfaces. The sheet is
31 provided with one or more strengthening ribs which
32 are preferably integrally formed with the sheet,

1 although they may also be added to the sheet later.
2 The ribs can run in any direction on the sheet, but
3 ideally run longitudinally along the sheet in the
4 same manner as that described in the first
5 embodiment. The same sticky substance is applied to
6 a portion of the top surface of the plastic sheet as
7 is applied in the first and second embodiments. The
8 sheet is preferably transparent to minimise the
9 visual impact of the trap.

10

11 Any insects or arachnids walking across or landing
12 on the sticky substance on the sheet will be trapped
13 there. The upper surface of the sheet can also be
14 provided with a smooth finish so that an insect
15 trapped near the edge of the sticky substance cannot
16 get purchase to extricate itself. When disposing of
17 the trap, the strengthening rib(s) ensure that the
18 thin sheet cannot fold back on itself, as
19 conventional flypapers can do. This avoids the user
20 potentially coming into contact with a trapped
21 insect or arachnid when disposing of the trap.

22

23 The insect trap 10,100 may be replaced and disposed
24 of periodically once a number of insects have been
25 trapped. If provided in strips, the sticky
26 substance 24 may also be replaced separately from
27 the trap 10,100.

28

29 The insect trap of the present invention is provided
30 with a novel composition of sticky substance which
31 ensures that insects and arachnids are trapped
32 whilst also ensuring that the viscosity of the

1 material is great enough to avoid any running of the
2 material when the trap is placed on any non-
3 horizontal surface. The novel composition is also
4 such that it counteracts any oil secretions from
5 arachnids in order to ensure that arachnids cannot
6 extricate themselves from the trap once caught. The
7 addition of a channel and smooth, inclined sides to
8 the trap also further improves the effectiveness of
9 the trap. Providing one or more strengthening ribs
10 on the trap also ensures that the trap cannot fold
11 over when being disposed of. As a result, the user
12 is less likely to come into contact with the trapped
13 insects or arachnids when disposing of the trap. If
14 the trap is provided with a channel, the rib(s)
15 located in the channel can also prevent objects
16 inadvertently coming into contact with the sticky
17 substance 24 within the channel 22.

18

19 Although the preferred embodiments of the trap are
20 described by themselves, the trap may further
21 comprise attachment means for attaching the trap to
22 other adjacent traps. An example of such an
23 attachment means is a male-female clip arrangement
24 for the traps to be simply clipped together. One
25 end of each trap has a male clip member, whilst the
26 opposite end of the trap has a female member to
27 receive the male clip of an adjacent trap. The
28 clips can also be adapted to act as a pivot, so that
29 a trap can be folded over on top of an adjacent
30 trap with the sticky surfaces of each trap coming
31 together. In this way, disposal of the used traps

1 and any trapped insects and arachnids can be made
2 easier for the user.
3
4 The trap may also be formed in a manner so as to
5 allow the traps to fit around corners, possibly by
6 providing traps having one tapered end or else traps
7 having an L-shape. Furthermore, the channel does
8 not need to be in the centre of the trap. Instead,
9 it could be located adjacent one edge of the body
10 with the entire top surface inclining upwardly to
11 the channel from the opposite edge of the body.
12
13 Additional ribs may also be provided in the channel,
14 dependent on the length and width of the channel.
15 Finally, although the preferred fixing means for the
16 bottom surface of the trap is an adhesive, the
17 plastics material from which the body is made can be
18 of a suitable softness that removable pins, staples
19 or nails may be used to fix the trap to a surface.
20
21 These and other modifications and improvements may
22 be made without departing from the scope of the
23 present invention.

Claims:

- 1 1. An insect and arachnid trap comprising a
2 substrate having a top surface and a bottom surface,
3 wherein at least a portion of the top surface has a
4 sticky substance applied thereto, and wherein the
5 substrate has at least one reinforcement rib.
6
- 7 2. The trap of Claim 1, wherein the substrate is
8 formed from a plastics material and the at least one
9 rib is integrally formed with the substrate.
10
- 11 3. The trap of either preceding claim, wherein the
12 substrate is an elongate sheet having a longitudinal
13 axis, and wherein the at least one rib runs
14 substantially parallel to the longitudinal axis.
15
- 16 4. The trap of any preceding claim, wherein the
17 substrate further includes a channel formed in the
18 top surface, and the sticky substance is located in
19 the channel.
20
- 21 5. The trap of Claim 4, wherein the at least one rib
22 is located in the channel.
23
- 24 6. The trap of either Claim 4 or Claim 5, wherein
25 the channel is broader at its base than at its top.
26
- 27 7. The trap of any of Claims 4 to 6, wherein the
28 channel has a depth of between 1.5 and 2mm.
29

- 1 8. An insect and arachnid trap comprising a
2 substrate having a top surface and a bottom surface,
3 wherein the substrate has at least one channel
4 formed in the top surface, and wherein at least a
5 portion of the channel contains a sticky substance.
6
- 7 9. The trap of Claim 8, wherein the substrate is an
8 elongate sheet having a longitudinal axis, and
9 wherein the channel runs substantially parallel to
10 the longitudinal axis.
11
- 12 10. The trap of either Claim 8 or Claim 9, wherein
13 the trap further comprises at least one reinforcing
14 rib located in the channel.
15
- 16 11. The trap of Claim 10, wherein the rib is
17 integrally formed with the substrate.
18
- 19 12. The trap of Claim 10 or Claim 11, wherein the
20 reinforcing rib runs parallel with the channel.
21
- 22 13. The trap of any of Claims 8 to 12, wherein at
23 least a portion of the top surface of the substrate
24 inclines upwardly from an edge of the substrate to
25 the channel.
26
- 27 14. The trap of any of Claims 8 to 13, wherein the
28 channel substantially bisects the top surface of the
29 substrate such that the top surface has first and
30 second top surface portions, each of the top surface
31 portions inclined upwardly from an edge of the
32 substrate to the channel.

- 1
2 15. The trap of any of Claims 8 to 14, wherein the
3 channel is broader at its base than at its top.
4
5 16. The trap of any of Claims 8 to 15, wherein the
6 channel has a depth of between 1.5 and 2mm.
7
8 17. The trap of any preceding claim, wherein the
9 substrate is substantially transparent.
10
11 18. The trap of any preceding claim, wherein the top
12 surface is provided with a substantially smooth
13 finish.
14
15 19. The trap of any preceding claim, wherein the
16 sticky substance is a composition including
17 polybutene oil and polyisobutylene.
18
19 20. The trap of Claim 19, wherein the sticky
20 substance includes between 5 and 15 wt %
21 polyisobutylene.
22
23 21. The trap of any preceding claim, wherein the
24 sticky substance is applied to the substrate in
25 strips.
26
27 22. The trap of any of Claims 1 to 20, wherein the
28 sticky substance is applied to the substrate in
29 fluid form.
30

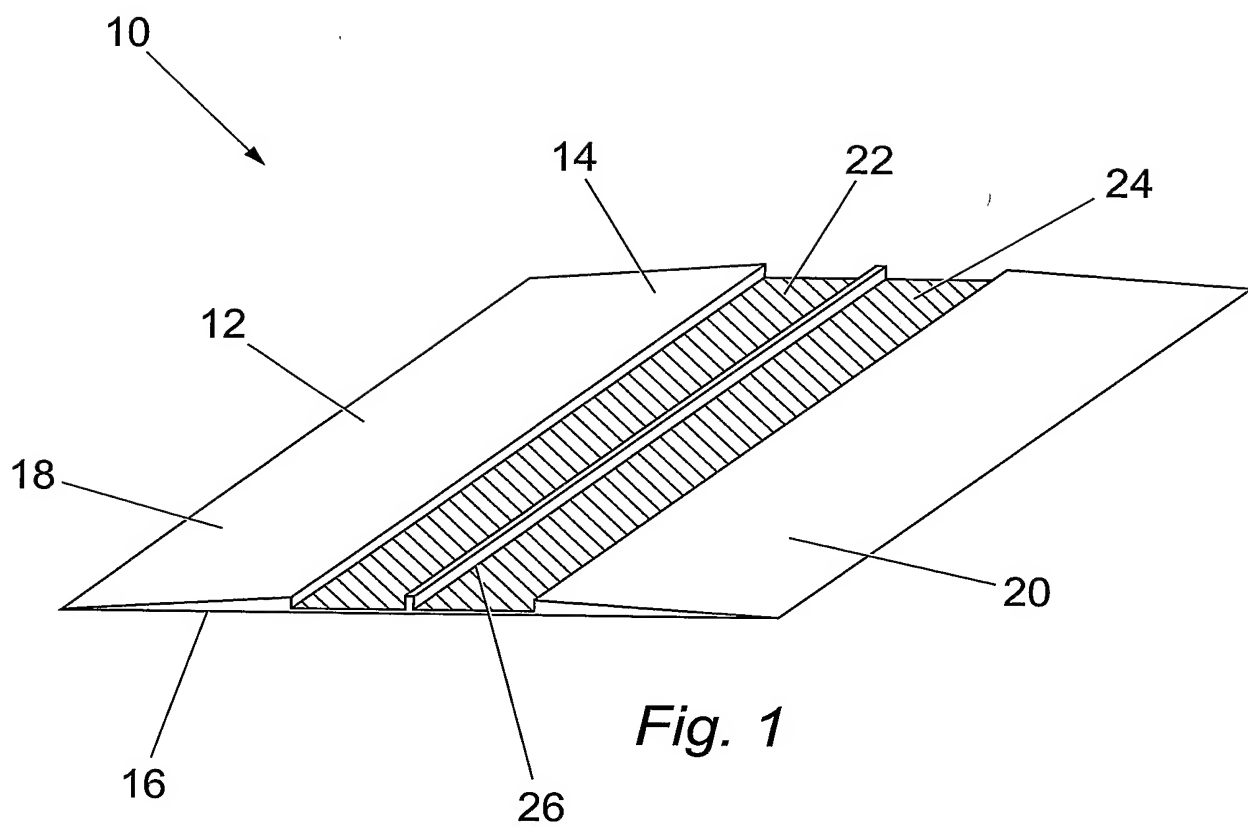
1 23. The trap of any preceding claim, wherein at
2 least a portion of the bottom surface is coated with
3 an adhesive adapted to secure the trap to a surface.

4
5 24. The trap of any preceding claim and further
6 comprising mechanical fixing means adapted to fix
7 the trap to an adjacent trap.

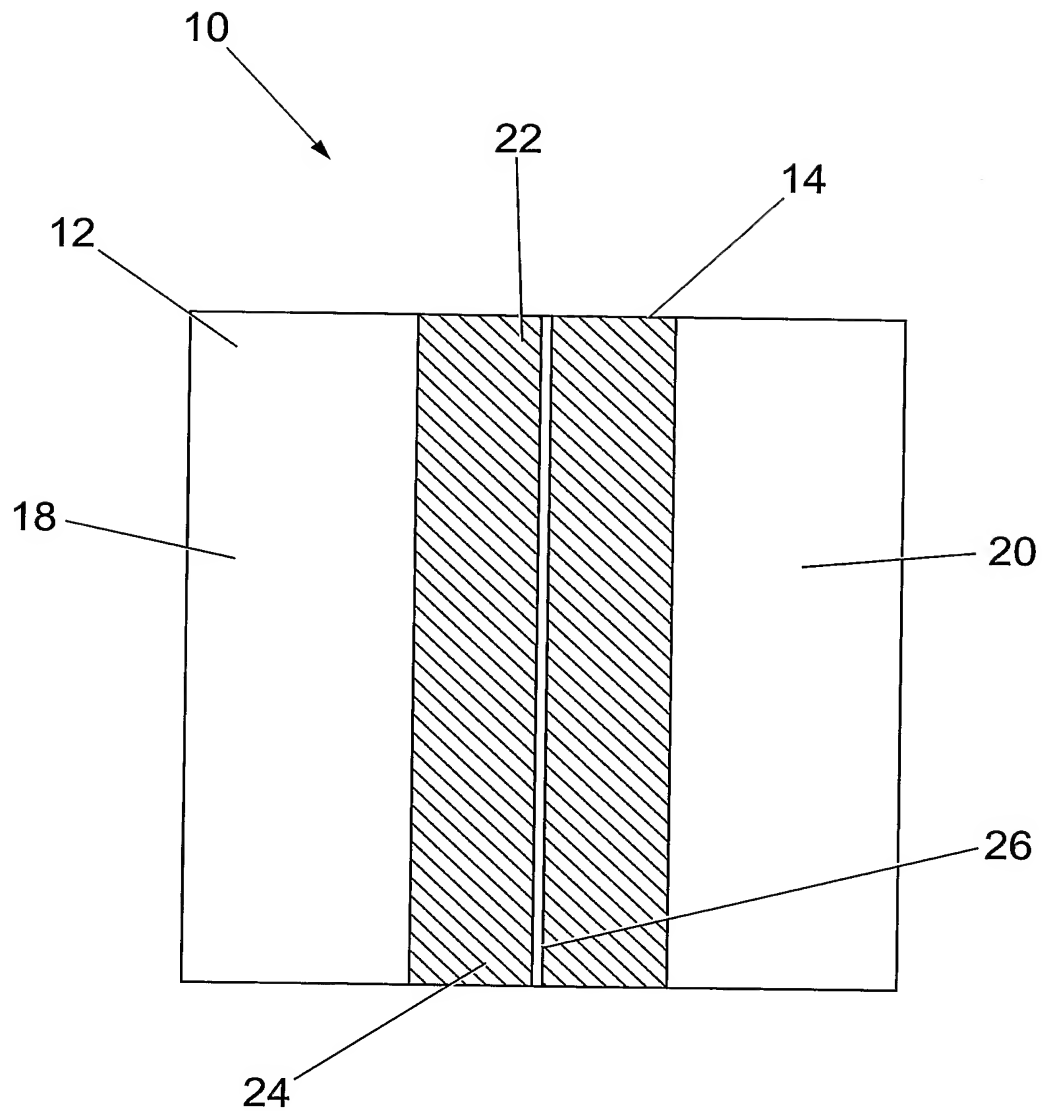
8
9 25. The trap of Claim 24, wherein the mechanical
10 fixing means comprises a male fixing element at a
11 first end of the substrate and a female fixing
12 element at a second end of the substrate.

13
14 26. The trap of either Claim 24 or Claim 25, wherein
15 the mechanical fixing means is adapted to permit
16 adjacent traps to be folded on top of one another.

1 / 5



2 / 5

*Fig. 2*

3 / 5

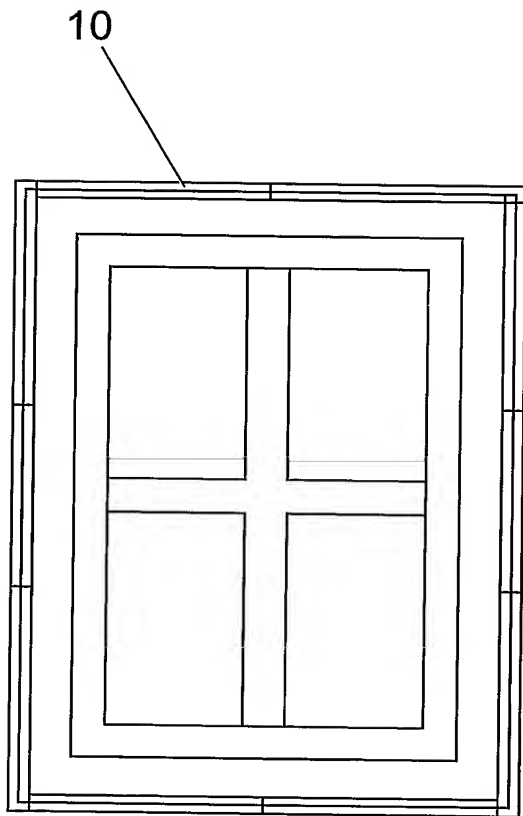


Fig. 3a

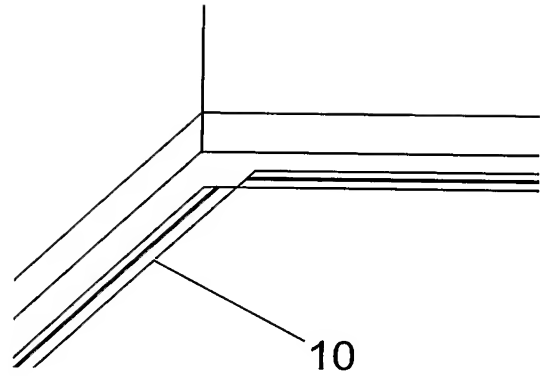


Fig. 3b

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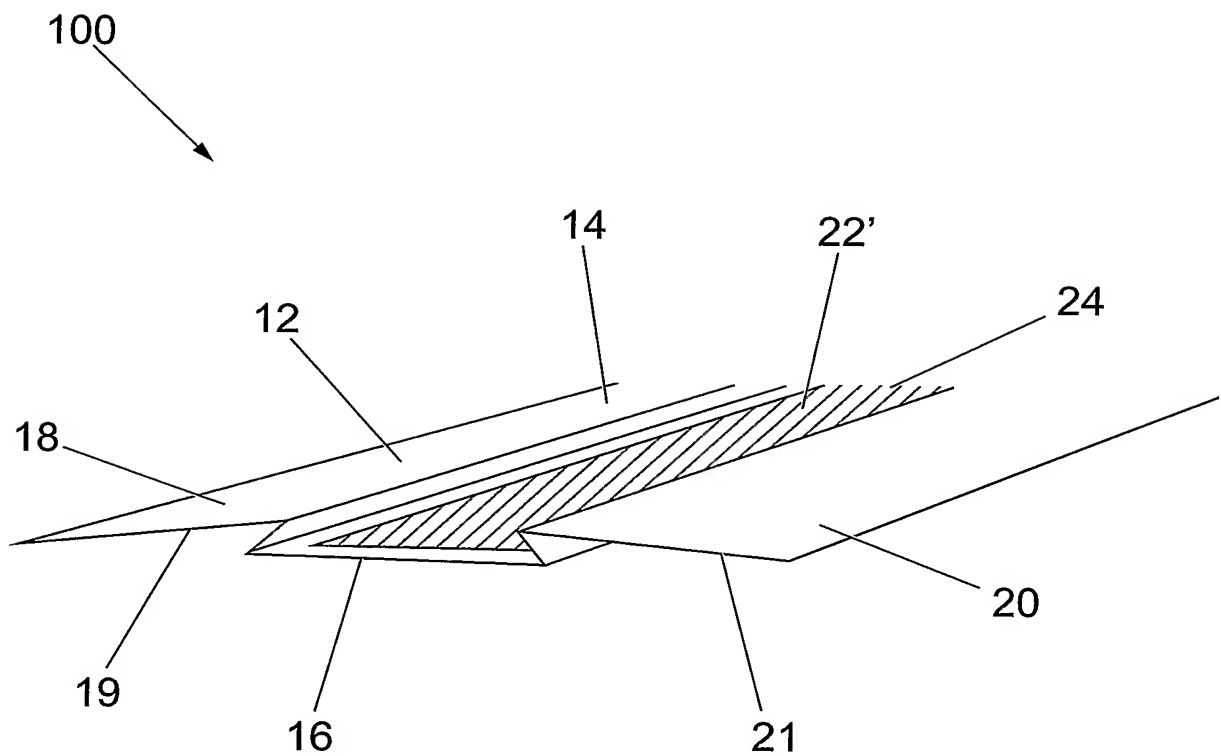


Fig. 4

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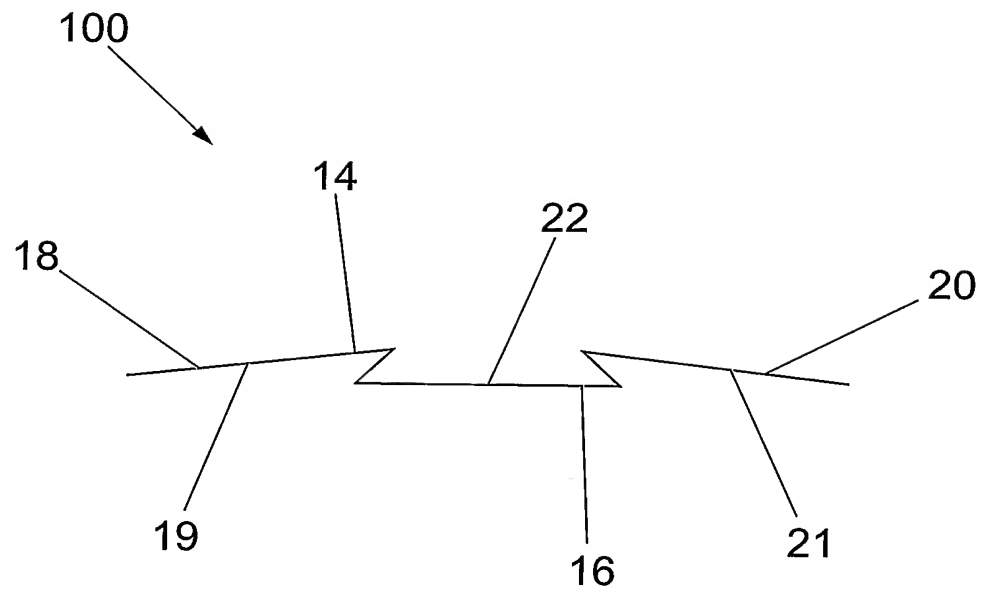


Fig. 5

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ABSTRACT:

CHG DATE=20050122 STATUS=O>An insect and arachnid trap (10, 100) comprises a substrate (12) having a top surface (14) onto which a sticky substance (24) is deposited. One embodiment of the trap (10) is provided with a reinforcing rib (26)

to reinforce the thin sheet substrate. The trap (10, 100) may also have a channel (22, 22') into which the sticky substance (24) is deposited. The top surface (14) may have a smooth finish and be inclined to the horizontal in order to prevent trapped insects and arachnids from extricating themselves from the sticky substance. The reinforcing rib ensures that the substrate (12) does not fold back upon itself when handled after use. Contact with trapped insects or arachnids is thus avoided.